

Phasmids of Bangladesh

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Abstract

This paper reports the results of phasmid collecting over two years in Bangladesh. Ten species have been collected, many of the records are new for Bangladesh, or new for the particular localities. Notes on foodplants are included, along with a brief guide to the appearance of the adults and eggs.

Key words

Phasmida, Bangladesh, *Baculum* sp., *Carausius* sp., *Medaura brunneri*, *Lopaphus* sp., *Rhampophasma spinicornis*, *Rhampophasma* sp., *Sipyloidea casignatus*, *Sipyloidea meneptolemus*, *Sipyloidea* sp., *Sosibia pholidotus*, *Trachythorax maculicollis*.

Introduction

In February 1996, I arrived for two years in Bangladesh in order to carry out my National Service in Co-operation. As I was already keen of phasmids, I was intending to take advantage of my sojourn in this country by searching for the local species. After a laborious start, as I was totally inexperienced, and as local people were ignorant about the presence of phasmids (they mistook the photos I was showing to them for grasshoppers, butterflies, dragonflies or cockroaches...) and giving me a lot of fanciful particulars, I found at last my first phasmid by a lucky chance. Later my searches proved to be a little more easier than I was thinking at first; the main difficulty was not to find the phasmids, but the forests!

The data is divided into two sections, each dealing with a particular area of Bangladesh.

Section One : Chittagong area

Previous work

To my knowledge, the region of Chittagong, contrary to that of Sylhet in north-east Bangladesh, had never been the object of a study about phasmids. So there was no documentation about the species present in this area. From February 1996 to January 1998, I found nine species there; six apterous and three winged. In order to make up a classification, I gave to these species the name of the country followed by the number corresponding to the order of their discovery.

Geographical situation

Bangladesh, formerly East-Bengal, is located at the intersection of the Indian subcontinent and the Indo-Chinese Peninsula. The region of Chittagong, where I mainly prospected, forms the western part of the old Arakanese region. It is surrounded by Burma, by the Indian provinces of Tripura and of Mizoram, and is washed by the waters of the Bay of Bengal (See Figure 1). Geographically, it is a part of the Indo-Chinese peninsula. It contrasts with the rest of the country, a vast plain constituting the delta of Ganges and Brahmaputra rivers, by a relief composed of hills rising more and more to the east, the foothills of the Arakanese range.

Until recently all the hills were covered with dense forests; as it was impossible to cultivate rice on terraces because of the sandy soil, there was no need to destroy them. But the overpopulation problem lead to a massive deforestation: Bengalis over-exploiting the forest. Now the Forest Office has promoted reforestation in some few places, but most of the time with acacia which is not indigenous. Only the part situated beside the borders, the Chittagong Hill Tracts, populated with Tibeto-Burmese tribes, has more or less escaped for the moment from the massacre. Unhappily this area is the theatre of a guerrilla war lead by

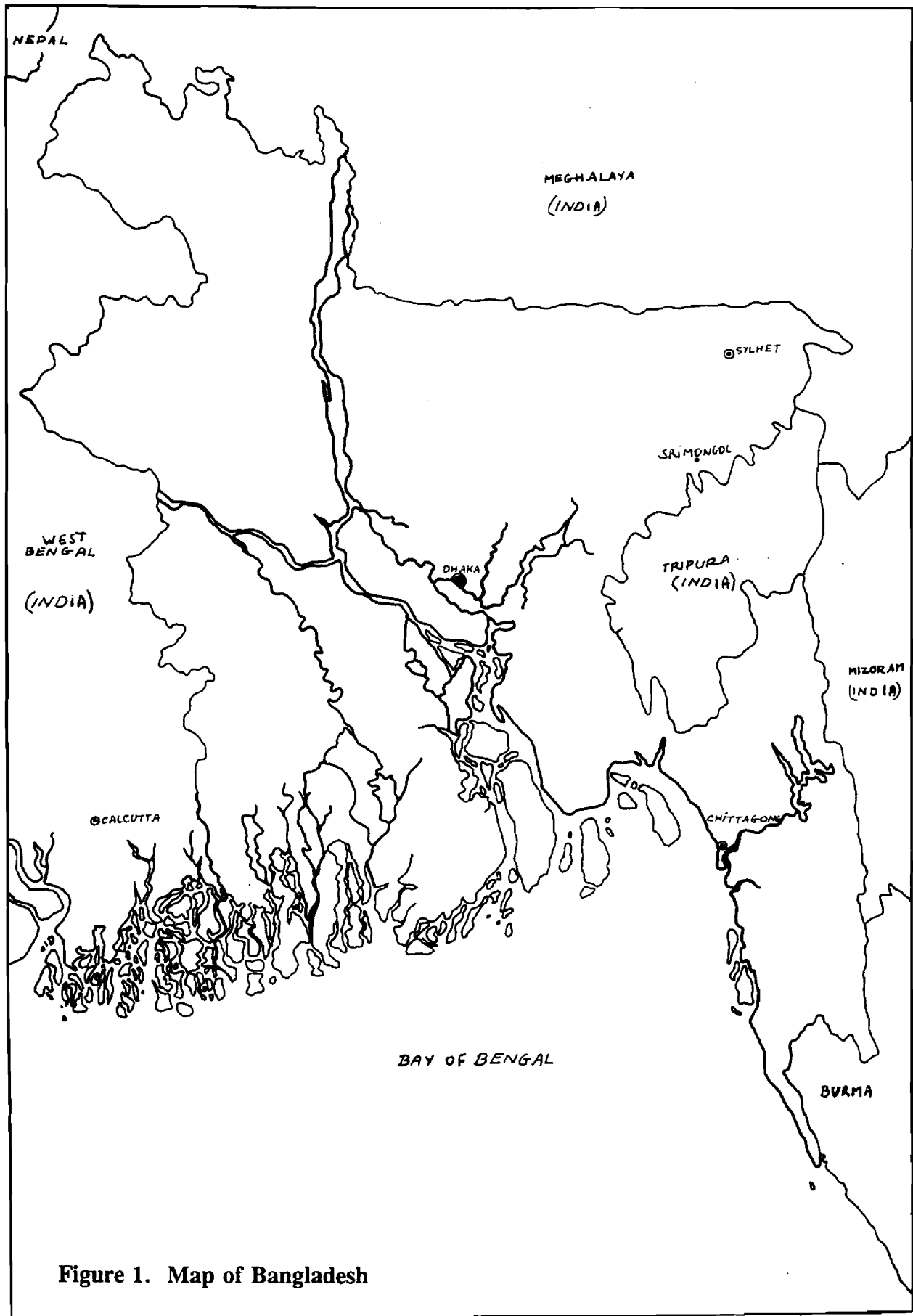


Figure 1. Map of Bangladesh

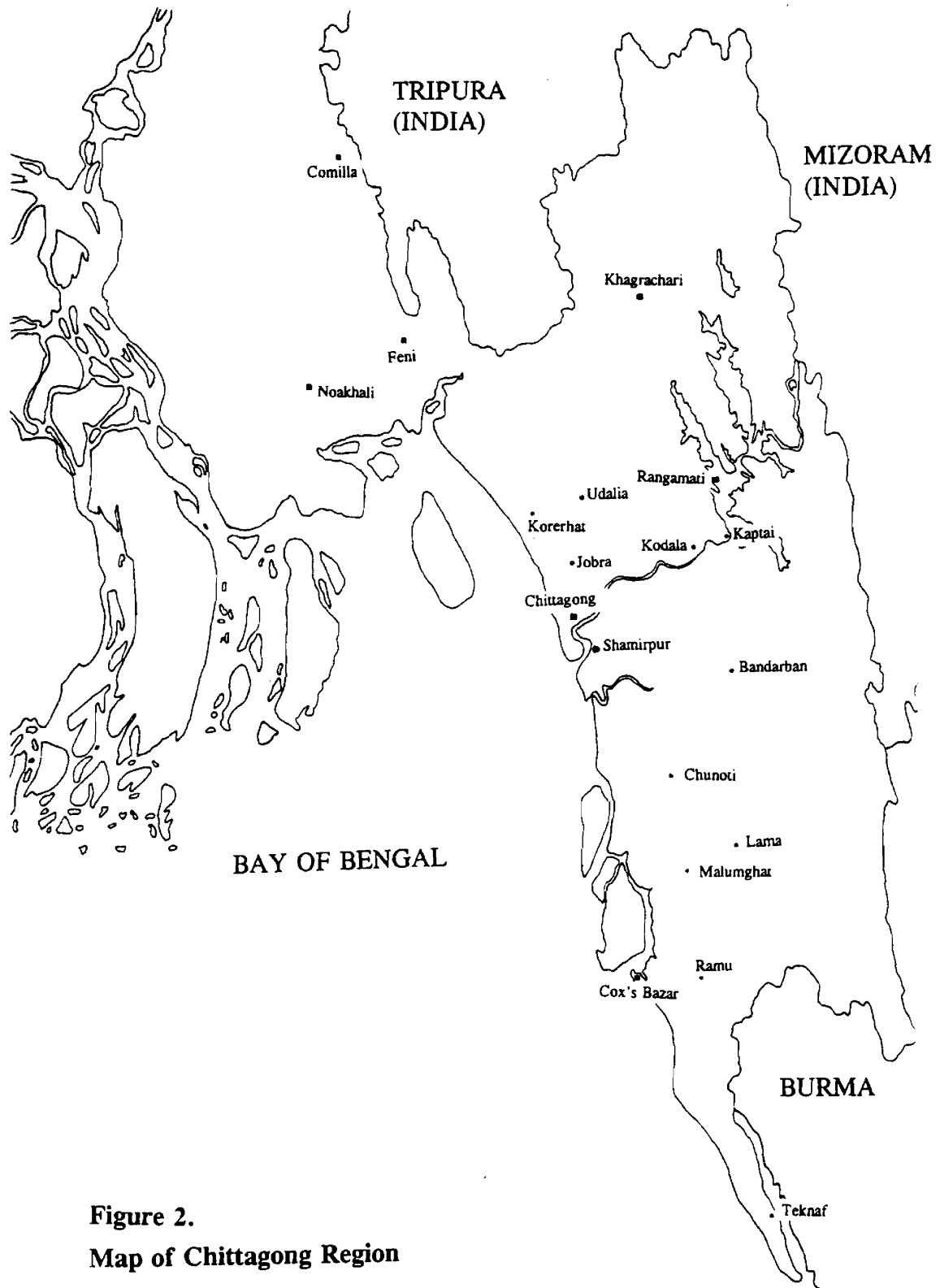


Figure 2.
Map of Chittagong Region

the tribes against the government and is off limits to foreigners (a peace treaty was signed at the end of 1997 and there is a hope of it opening up soon).

The climate is tropical and is divided into three main seasons: winter (October-February) is genial and dry; hot season (March-June) is much more humid; monsoon (June-September) is characterised by very abundant rainfall (the most humid place in the world is situated nearby in Assam). There are about 2500-3000mm of water falling in a year in the area of Chittagong. The humidity remains high all year round and climaxes during the monsoon.

Collection sites

All the insects I found come from ten localities: Chittagong, Kodala, Jobra, Chunoti, Malumghat, Ramu, Teknaf, Udalia, Shamirpur and Bandarban (see Figure 2). In Chittagong, they were from some small hills in the middle of the town which remained more or less wild; three species have been found there (*Bangladesh 1*, *Bangladesh 3* and *Bangladesh 8*). In Kodala, the site consists of a plantation of teaks which has quite recently succeeded the primary forest; I found four species there (*Bangladesh 2*, *Bangladesh 3*, *Bangladesh 5* and *Bangladesh 6*). In Jobra natural forest has been progressively replaced in the seventies by some new plantations, principally of acacias and eucalyptus; the presence of the university of Chittagong in this place is a little protection against the armies of woodcutters who destroy the little there is still to protect in this country; there, I found five species (*Bangladesh 1*, *Bangladesh 3*, *Bangladesh 4*, *Bangladesh 7* and *Bangladesh 8*). Chunoti is a primary forest very degraded, often invaded by bamboo: five species cohabit there (*Bangladesh 3*, *Bangladesh 4*, *Bangladesh 5*, *Bangladesh 6* and *Bangladesh 9*). Malumghat is also a primary forest, but it has lost its wild aspect; I found two species there with just one example of each (*Bangladesh 1* or *Bangladesh 4* and *Bangladesh 3*). Ramu is a secondary forest with a very thick low vegetation; I found just one phasmid there (*Bangladesh 3*). In Teknaf there is a quite well conserved primary forest (with wild elephants); I met two species there (*Bangladesh 2* and *Bangladesh 3*). Udalia is a tea plantation where I captured a phasmid in the nearby thickets (*Bangladesh 1*). Shamirpur is a village with a lot of trees where I found also just one phasmid (*Bangladesh 1*). Concerning Bandarban (one species: *Bangladesh 2*), I do not know the place of capture as it is situated in the tribal zone which is in trouble: to prospect in this area, I had to employ a Bengali (working in the entomological department of the Forestry Research Institute in Chittagong where there is a beautiful collection of insects, with some specimens of phasmids very poorly conserved) with very mediocre results. All these places are situated on low hills (I estimate no more than 250m) because all the plains are entirely occupied by rice fields.

Collecting methods

I always collected in the daytime, because it is difficult to move in the countryside at night and impossible to lodge there. The first thing to do is to spot bushes with traces of eating characteristic of phasmids and to scrutinise all over: on or under the leaves, on the stems, in the interlace of bare branches in the heart of the clump, etc. When the host plant is determined and when the habits of diurnal camouflage of the wanted species are known, the search often becomes quite easy. For the winged species, it is much more simple because just by shaking the bush you usually flush out one or more specimens. I also used a beating tray which was sometimes fruitful. The main problem is to protect oneself against mosquitoes and, much more insidious, against leeches which swarm in some places. The bites of red ants are not really agreeable. Snakes are not abundant, and monitors were at least as scared by me as I was by them at first!

Biology

The best places to find phasmids are forests of course, but I also found *Bangladesh 1* (just one example each time) in two cultivated areas (Udalia and Shamirpur). I met just two phasmids on the edge of high thickets, far from the trees (*Bangladesh 1* at Udalia and *Bangladesh 4* at Chunoti). Their favourite habitat appears to be the zones of secondary forests (as Kodala and Jobra) with fairly thick low vegetation. They look to be much more scarce in the primary forests where I never find them except at the fringe. One may also put forward the hypothesis that in the secondary forest where the replanted trees are generally not indigenous species, the phasmids do not climb them and stay exclusively at the level of the shrubs where the local species they eat are found, whereas in the primary forest they can find food above and thus slip out of the prospector's searches.

The host plants are little diversified: the one hosting the greater number of species of phasmids is assargach (*Microcos paniculata* (Tiliaceae)) which is very common; most of the time you find it in the shape of a bush but it is normally a tree, as is sheoragach (*Streblus asper* (Moraceae)) which you also find in the shape of small bushes. That last one, according to the Bengali belief, is supposed to be the abode of female ghosts!

In the middle of winter, phasmids are very scarce; then it is some old specimens which are going to die soon, or early nymphs which do not seem likely to survive. The coming of spring (at the end of February), characterised by a sudden rise of temperatures and the first rainfalls, marks the beginning of the massive hatching of eggs. The nymphs develop during the hot season and reach maturity at the monsoon time. This is the period in which the populations of adults are the most important, but it is possible to find some very scarce adults from March. The general pattern obviously varies according to the immediate environment (exposure, residual humidity, nature of the plantation, etc.) and much more according to the species. For example, there is just one generation of *Bangladesh 2* a year (slow incubation and development) against at least three generations of *Bangladesh 8* (very rapid incubation and development).

Another climatic factor is the cyclones. The region of Chittagong is very exposed to this kind of catastrophe which seems to have very little consequence for the phasmids: the big cyclone which damaged the region in May 1997 did not have any apparent impact on the populations.

Species collected

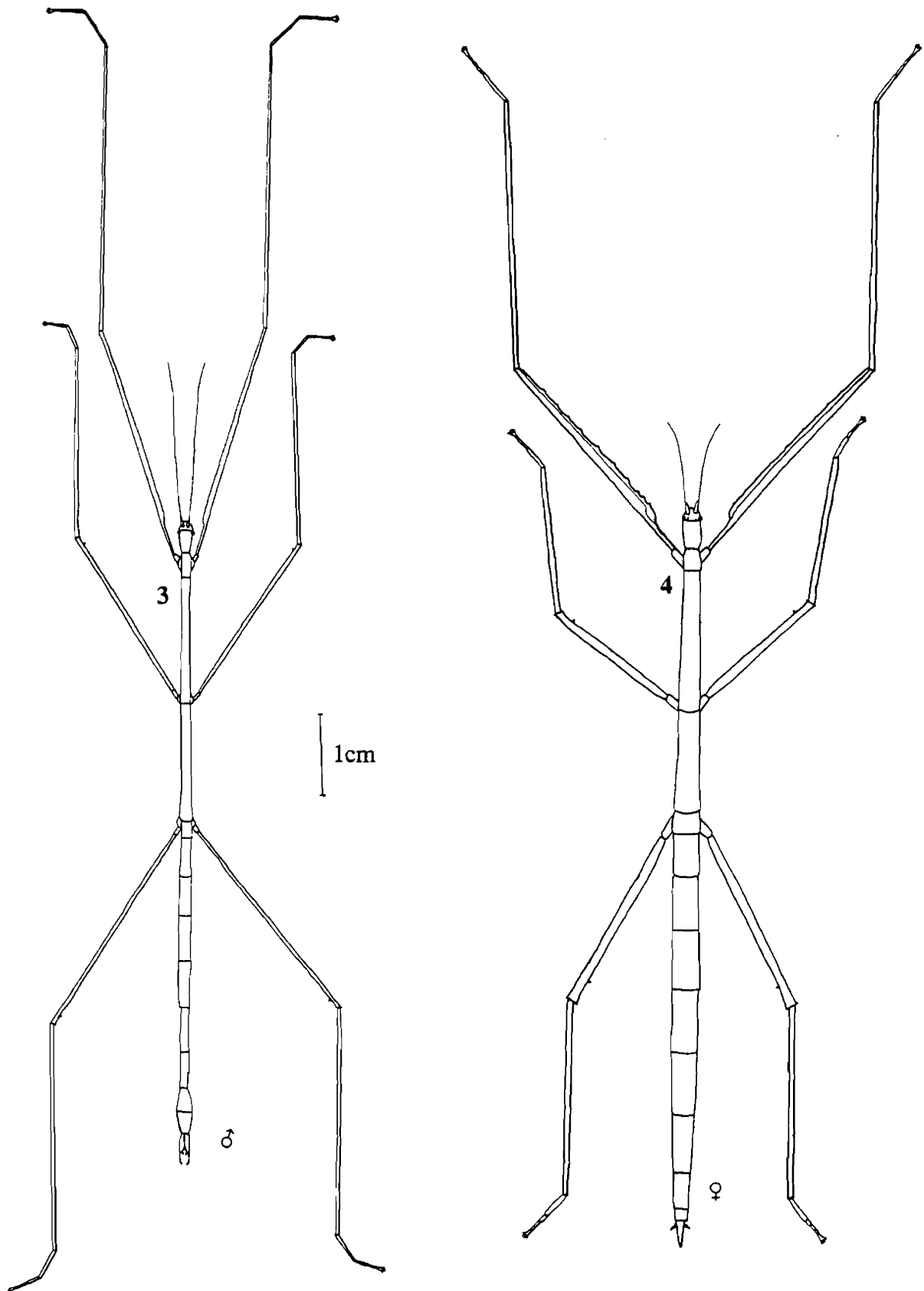
As previously mentioned, species were numbered in the order in which they were collected. Their identity has since been established by Paul Brock.

Bangladesh 1: *Rhamphophasma spinicornis* (Stål, 1875). PSG 194.

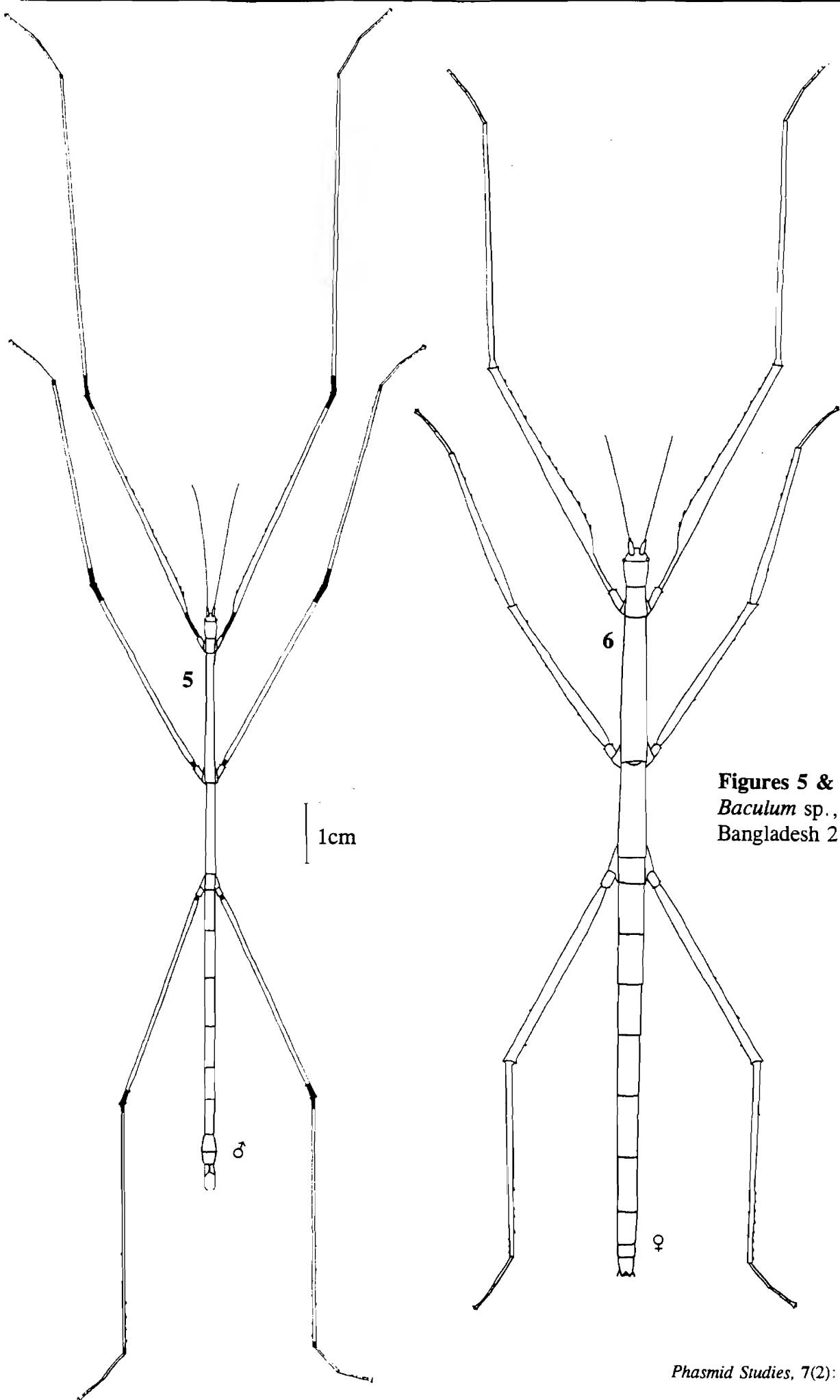
It was found in Chittagong, Jobra, Chunoti, Udalia and Shamirpur (also reported in Korerhat by the Forest Research Institute).

It is an apterous stick insect (Figures 3 & 4). The body length of the female is 90-100mm. The colour is generally a yellowish light green. The antennae are short (about 12mm). The abdomen ends in a light brown tapering point. The head presents two small black horns. The filiform male measures about 80mm with antennae of 21mm. Its body is brown with a lot of variations. The extremity of the abdomen is cleft. Eggs are in the shape of little sticks (Figure 20). Their size is 6mm by 1.5mm. They are beige and the operculum bears a crown of hairs.

This species feeds mainly on *Microcos paniculata*, but I sometimes found it on *Bridelia stipularis* (Euphorbiaceae). This species is in culture as PSG 194, feeding on bramble and hawthorn.



Figures 3 & 4. *Rhamphopasma spinicornis* (Stål), Bangladesh 1: male & female.



Figures 5 & 6.
Baculum sp.,
Bangladesh 2.

Bangladesh 2: *Baculum* sp.

It is present in Kodala, Bandarban and Teknaf.

This is a wingless stick insect (Figures 5 & 6). The female measures 120-125mm with a width of 4-5mm at the fourth and the fifth abdominal segments level. Its colour is a yellowish green more or less light according to the individuals (with some scarce light brown specimens). The antennae are 15-20mm long. The abdominal extremity is bilobate. The specimens from Teknaf have two minuscule horns on the head; on those from Kodala, it is just possible to see a vestige of these protuberances in the shape of a dark line.

The filiform male measures about 90mm. The main colour is brown, but the mesothorax and the metathorax are bright red on the two sides with bright green lateral strips (these colours became dim for an unknown reason). The abdominal extremity is cleft.

The eggs are round, flattened, with a very broad granular aspect (Figure 22). They are generally light brown but sometimes grey. They measure about 3mm in length.

This species feeds on *Microcos paniculata*.

Bangladesh 3: *Sipyloidea* sp. (*S. meneptolemus* (Westwood, 1859) ?).

It is found in Chittagong, Jobra, Kodala, Chunoti, Malumghat, Teknaf and Ramu.

This is a winged stick insect (Figures 7 & 8). The female is green or more scarcely brown; its length is more or less 88mm with antennae of about 62mm. The wings are 47mm long; they lightly overreach the fifth abdominal segment; unfolded, they present a blackish colour. The male is darker than the female. It is about 60mm long. The wings reach the extremity of the fifth abdominal segment; unfolded, they present a beautiful orange-colour. The eggs are small (3-3.5mm long), ovoid with a flat operculum, brown or grey and very distinctly wrinkled.

This species feeds on *Microcos paniculata*.

Bangladesh 4: *Rhamphophasma* sp. (?)

This phasmid is present in Jobra, Chunoti and Malumghat.

This species is very similar to *Bangladesh 1* (*Rhamphophasma spinicornis*) but stands out particularly with its size and the colour. The female is larger (about 110mm) and much darker, with bigger variations of colour from one specimen to another (from deep brown to deep green). The only thing that distinguishes the males of the two species is the size (about 90mm for *Bangladesh 4*). The nymphs seem to be quite different: *Rhamphophasma spinicornis* are usually uniformly light green when *Bangladesh 4* are brown or black with lighter coloured legs or with light coloured strips on the femur. The eggs appear to be wholly identical.

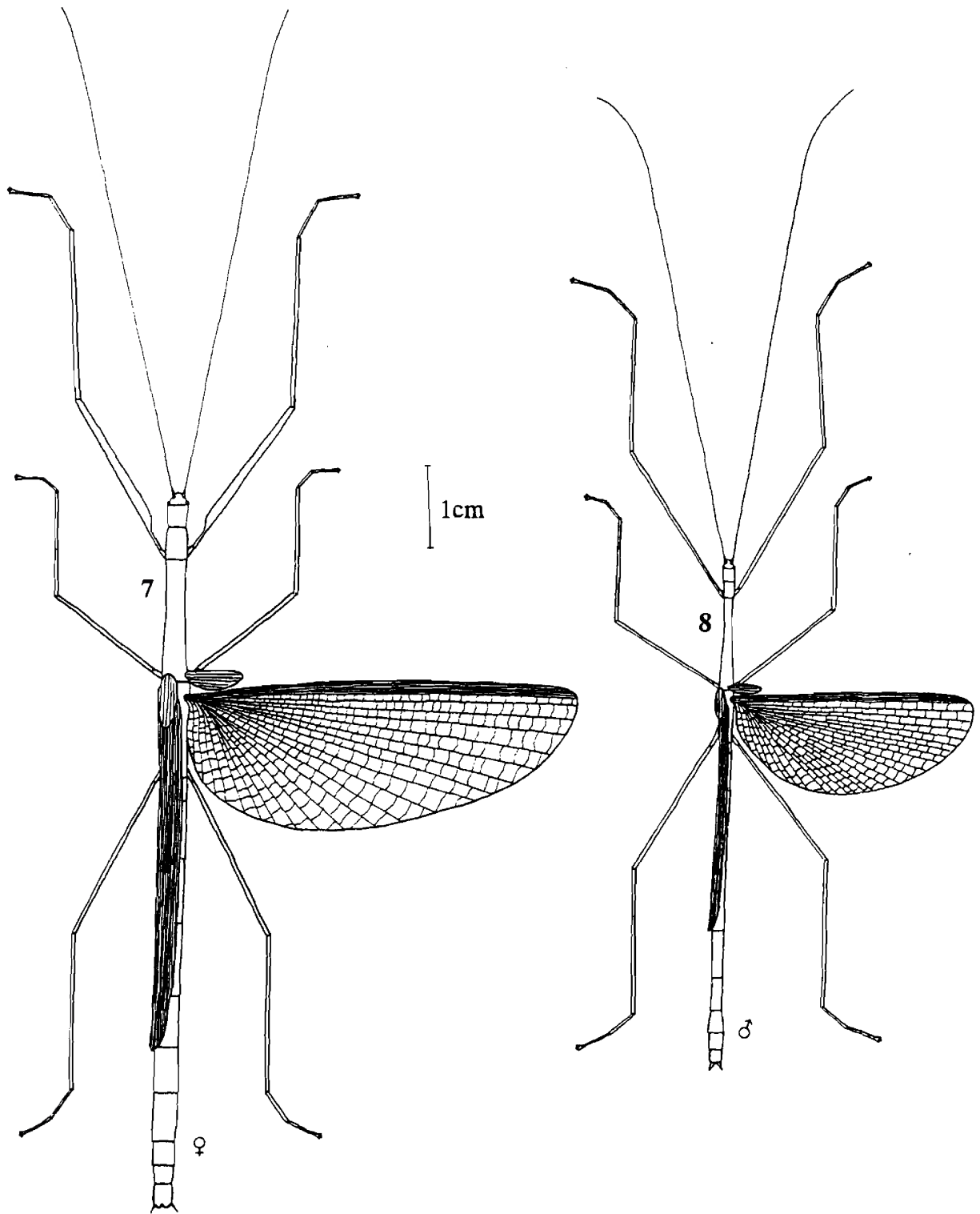
It feeds on *Microcos paniculata*.

Bangladesh 5: *Sipyloidea* sp. (PSG 201)

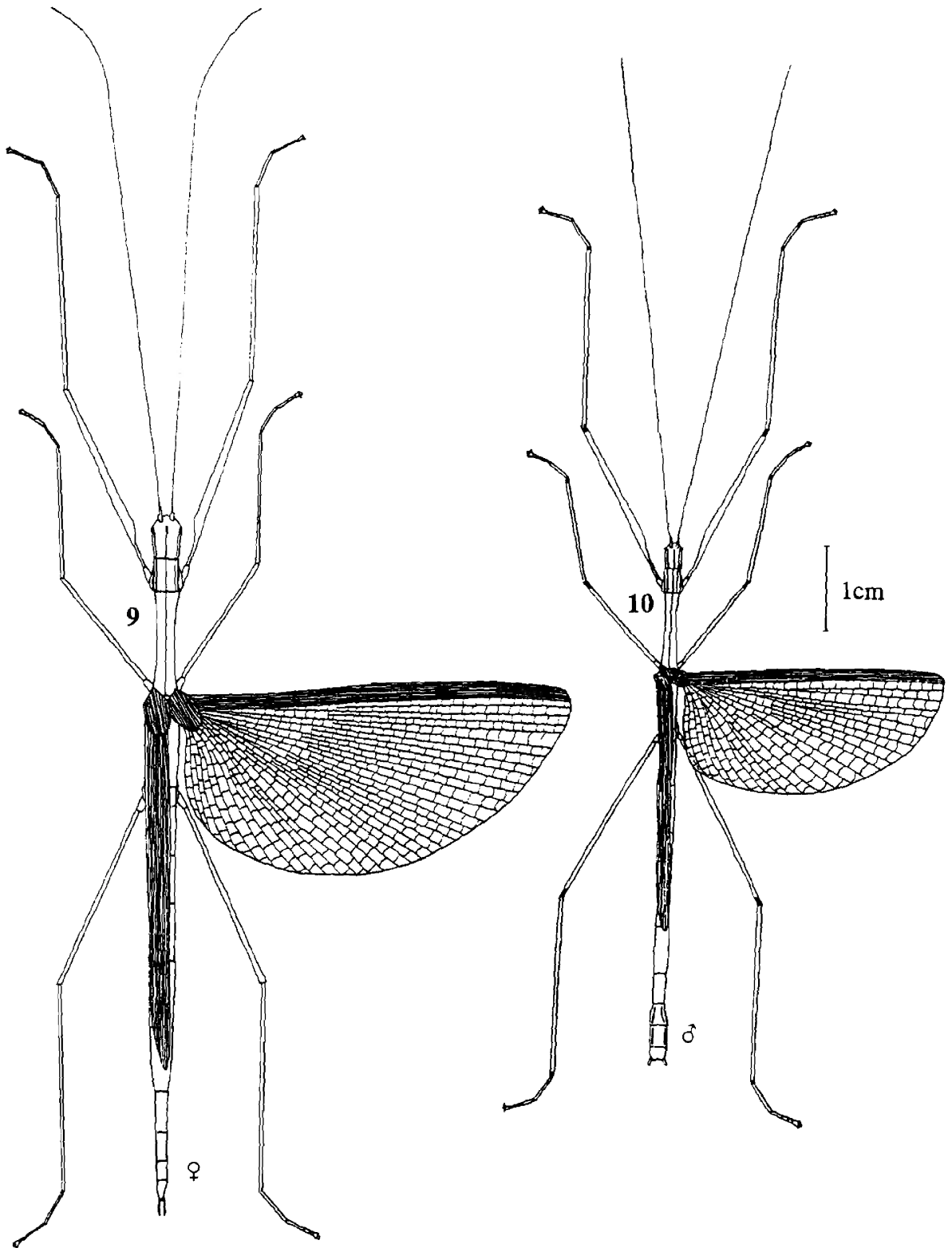
This is a brown or straw-yellow winged stick insect (Figures 9 & 10). In the manner of *Sipyloidea sipylus*, which it resembles a lot, it gives off a rank odour of crunched leaves when it is disturbed. The eggs are also very similar. It was found in Chunoti and in Kodala.

The female measures 86mm on average with a maximum breadth of 5mm at the metathorax level. The antennae are 65-70mm long. The wings measure about 45mm and reach the middle of the sixth abdominal segment. Unfolded, they present sometimes a pink-colour. The specimens from Chunoti were orange-colour brown with straw yellow wings when those of Kodala were entirely straw yellow. The male is a miniature version of the female; it is about 60mm long with an average breadth of 1.5mm; the wings measure around 30mm. The eggs are oblong, they measure 4mm by 1mm (Figure 21). They are black and white streaked. The female glues them in the nooks.

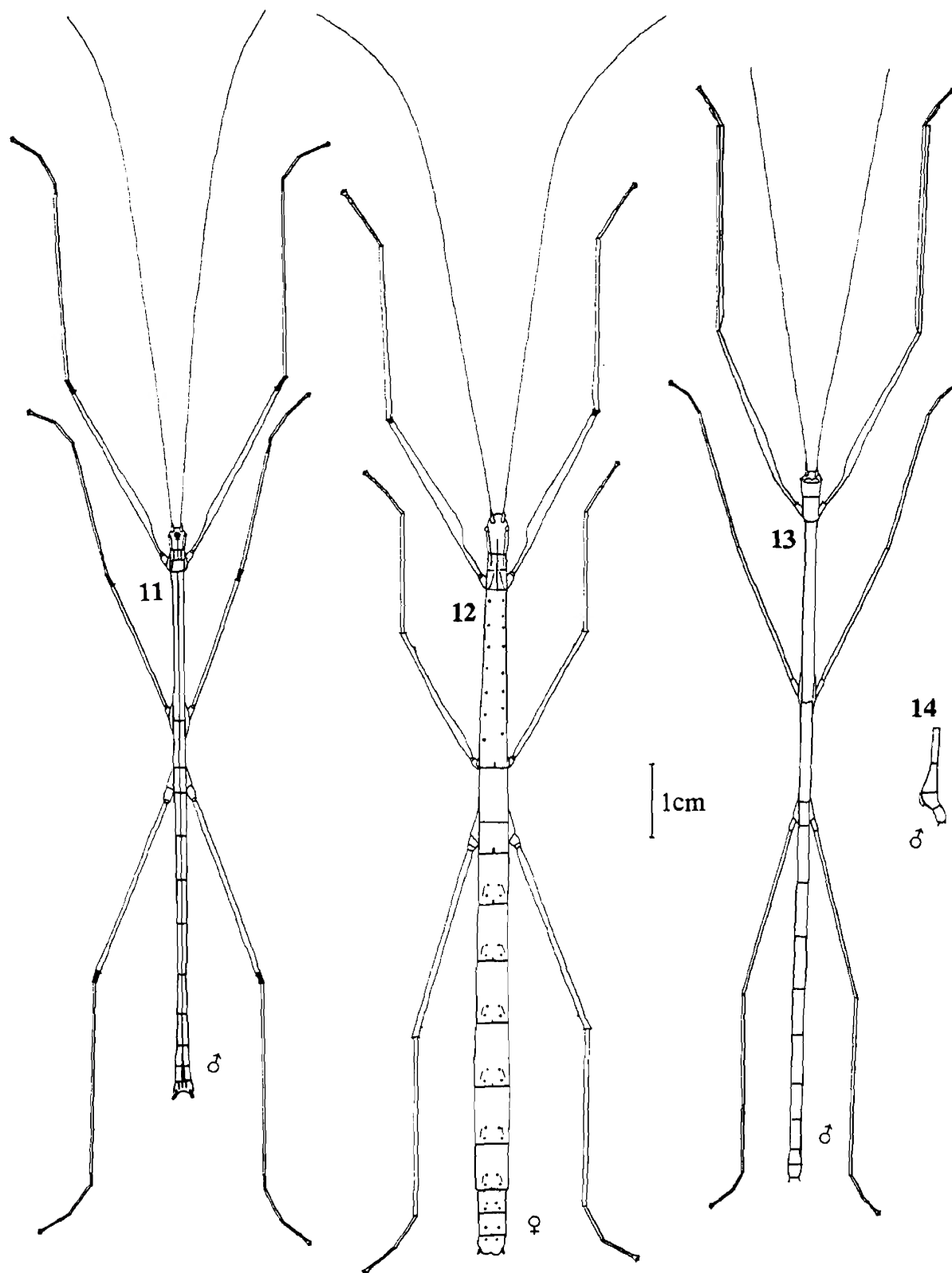
It feeds on *Microcos paniculata*. This species is in culture as PSG 201, feeding on bramble and hawthorn.



Figures 7 & 8. *Sipyloidea* sp., Bangladesh 3: female & male.



Figures 9 & 10. *Sipyloidea* sp., Bangladesh 5: female & male.



Figures 11-14.
11 & 12 *Lopaphus* sp.?, Bangladesh 6: male & female.
13 & 14 *Carausius* sp., Bangladesh 9: male.

Bangladesh 6: *Lopaphus* sp.

This is an apterous stick insect (Figures 11 & 12). It is present in Chunoti and in Kodala.

The female is generally greenish light brown, sometimes deep brown, with large whitish spots. It measures about 100mm with a maximum breadth of 5mm at the fourth abdominal segment. The antennae are about 80mm long. The male is filiform, mainly brown with a red mesothorax with blue lateral strips; it measures about 80mm with antennae as long as the body. The eggs are round and black, quite similar to those of *Carausius morosus*.

This species feeds on *Microcos paniculata*.

Bangladesh 7: *Medaura* sp. (*M. brunneri* Stål, 1875 ?). PSG 202.

It is present in Jobra.

It is an apterous stick insect (Figures 15-17). The female is generally light brown and is about 100mm long with a maximum width of 9mm at the metathorax. The antennae are short (about 17mm). It presents two pairs of horns on the head and the whole body is very granular. There are many outgrowths on the legs. The male varies from light brown to deep brown. The mesonotum and the metanotum have a long whitish strip surrounded with red or black. It measures a little over 70mm with a general width of 2.5mm. The antennae are about 18mm long. The eggs are round, dark grey and measure 3mm by 2mm.

This species feeds mainly on *Microcos paniculata* and on *Streblus asper* but appears to be very polyphagous. This species is in culture as PSG 202, feeding on bramble and hawthorn.

Bangladesh 8: *Trachythorax maculicollis* (Westwood, 1848).

I found this species in Jobra and also in Chittagong, but only one specimen and some hatched eggs (located in Lama too by Forestry Research Institute).

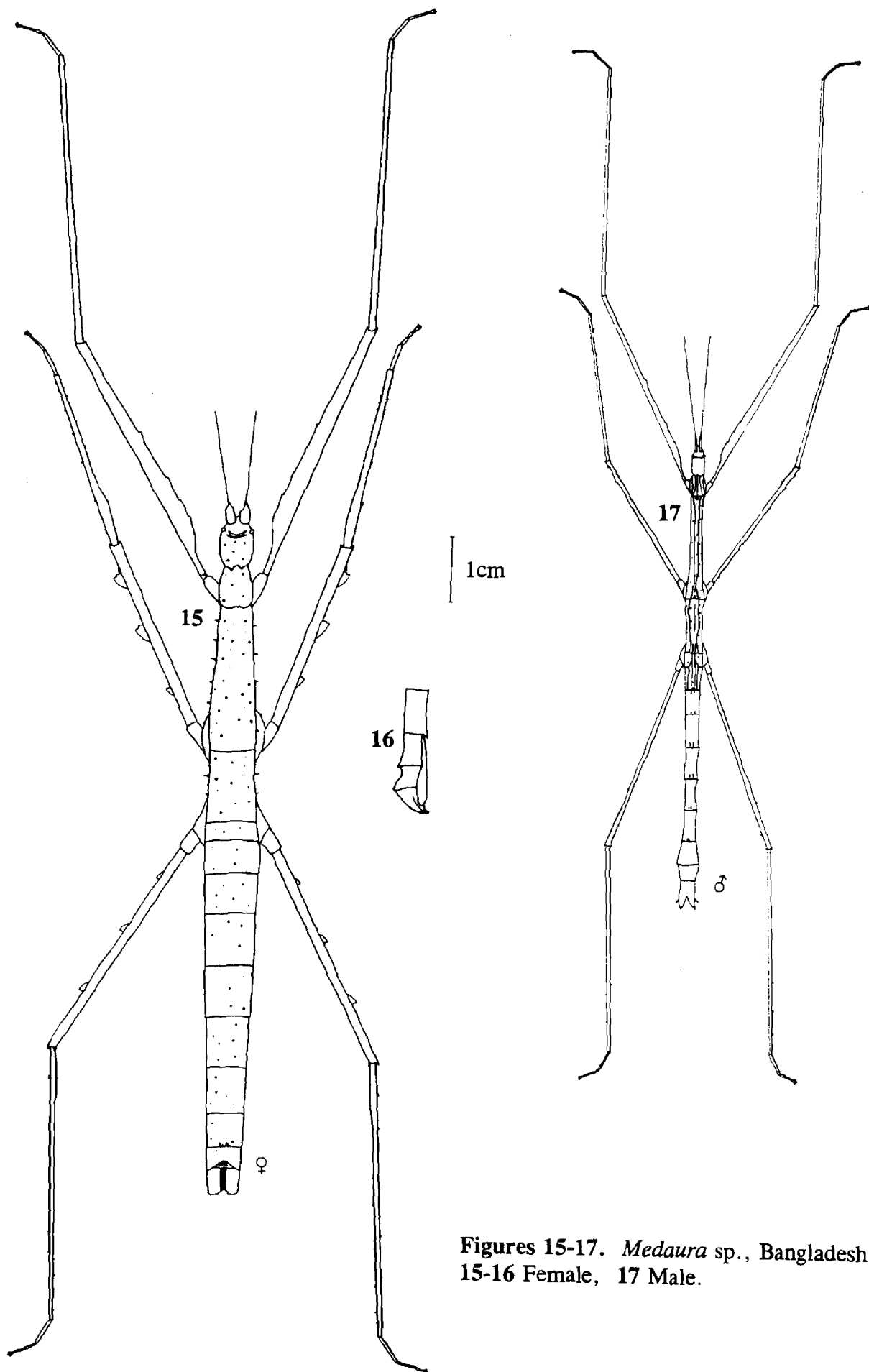
This is a winged stick insect; it is quite dumpy (Figures 18 & 19). The female is deep brown and grey; it measures about 75mm with a maximum breadth of 7mm at the metathorax. The antennae are long (around 53mm). The wings measure about 56mm and nearly reach the extremity of the abdomen. This phasmid has bright red coloration at the level of the pleurite joining the head and the thorax, on the prothorax and the mesothorax at the level of the indentation of the coxae and at the base of wings (coloration only visible when they are unfolded). The shape of the head looks like the one of *Extatosoma tiaratum*, but thornless. On the mesothorax, two protuberances are distinctly visible. The male has the same characteristics as the female but there are no protuberances on the mesothorax; it measures 43mm on average with a breadth of 2.5mm. The female attaches several eggs (one to thirty) on the leaves or on the branches. They are spheroidal, light beige, and present a crown of hairs around the operculum (Figure 23).

This species feeds on *Streblus asper*.

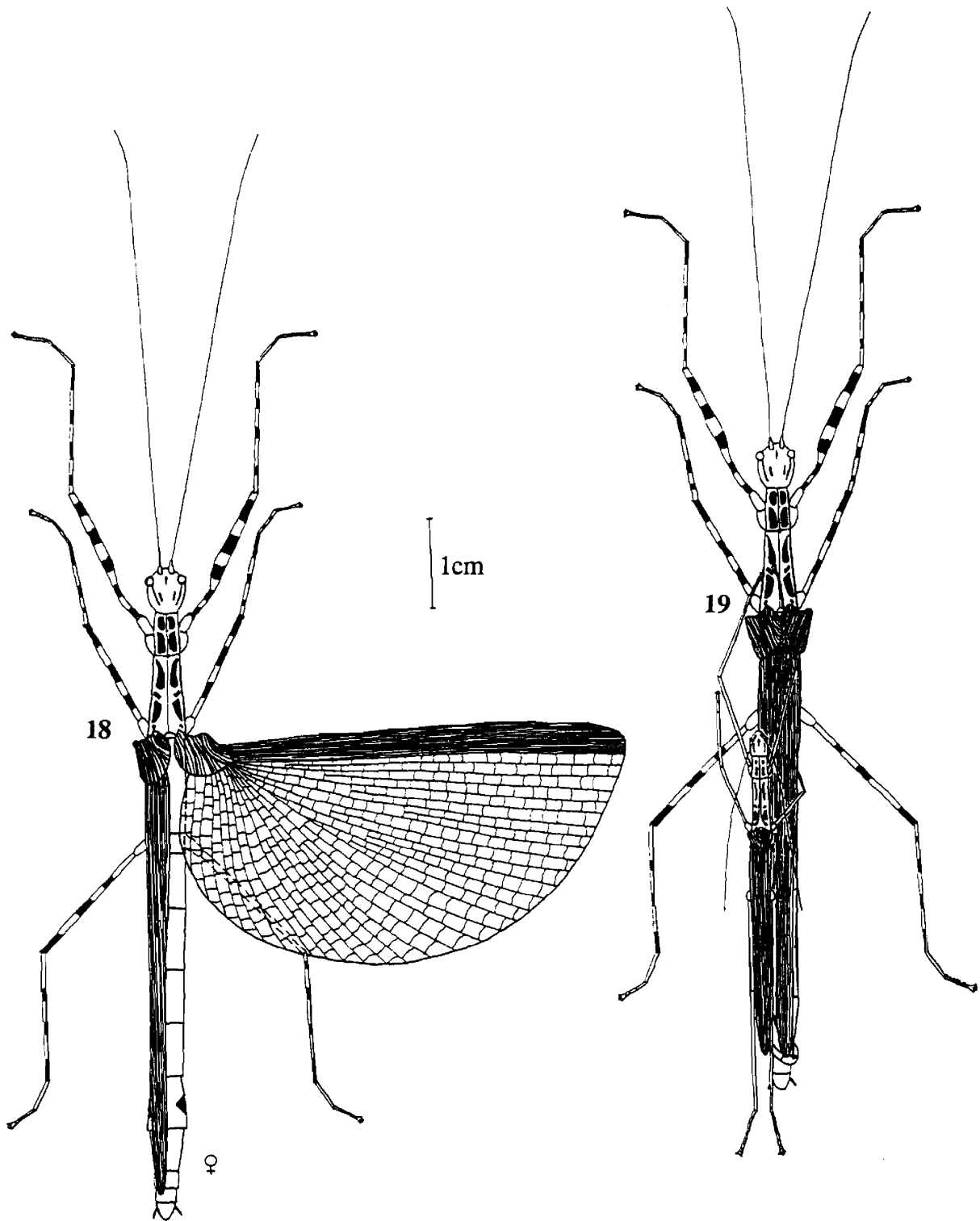
Bangladesh 9: *Carausius* sp. (?).

The female of this species, which was found in Chunoti, is unknown. The male is filiform; it measures more or less 100mm with an average breadth of 2mm. Its antennae are about 58mm long. Its head presents a crown-like protuberance, 1mm high. It is mainly brown with a bloody red mesosternum (Figures 13 & 14).

This species feeds on *Microcos paniculata*.



Figures 15-17. *Medaura* sp., Bangladesh 7.
15-16 Female, 17 Male.



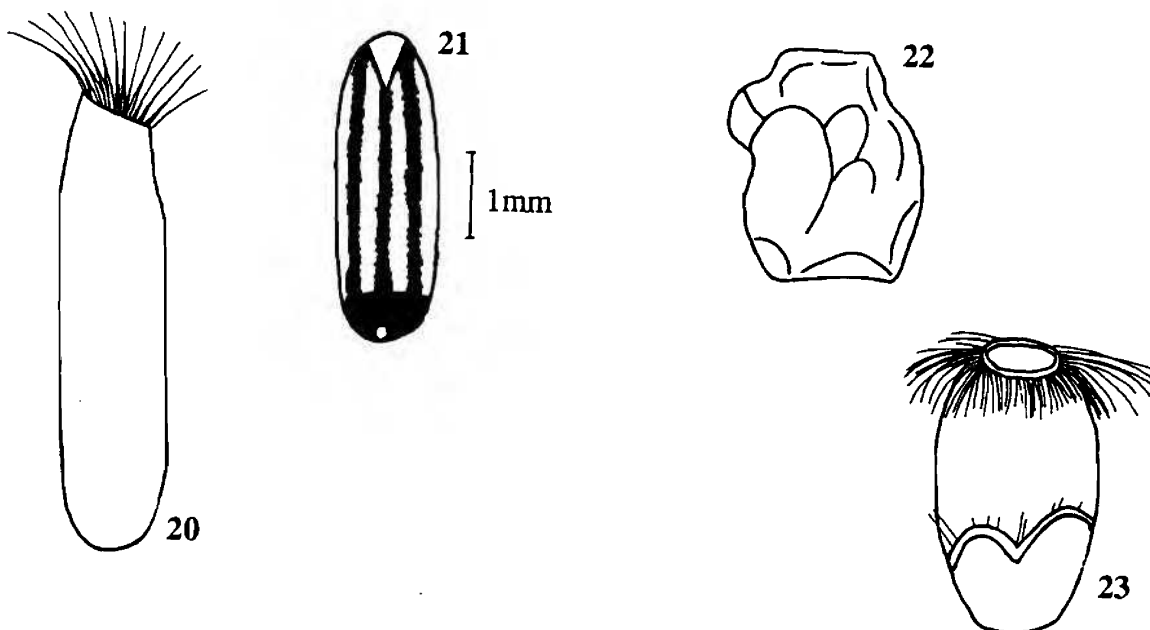
Figures 18 & 19.
Trachythorax maculicollis (Westwood), Bangladesh 8.
18 Female, 19 Mating pair.

Phyllium

In spite of numerous searches and of numerous inquiries among zoologists or locals, I did not find *Phyllium* in Bangladesh. Nevertheless, the Forestry Research Institute of Chittagong has a specimen (a female in a very bad condition) collected in Kaptai; it is very likely a *Phyllium celebicum* for this female has complete wings under its elytra. Furthermore, botanists of University of Chittagong affirmed to me they saw (but on very few occasions) *Phyllium* on the site of the university (in Jobra). Lastly, in Kodala, locals I interrogated about this sometimes gave positive answers (but these people do not take the faintest interest in this matter: some of them even did not know of phasmids though they are very abundant on this site): those ones who told they knew *Phyllium* assured me they see them sometimes on the guava trees and on the lemon trees (they cultivate these trees at the bottom of the hills which are planted with teaks). A local told me he killed one because it was eating the leaves of a guava-tree; he added he then saw eggs inside the body of the insect. On the leaves of guava-trees I saw some traces of very round eating, quite typical of *Phyllium*, but nothing more.

Addendum 1

I was in Bangladesh from mid-August to mid-September 1998. I spent some time looking for phasmids. Now it is easier for a foreigner to enter the Chittagong Hill Tracts after the peace treaty. I just found a new locality for *Rhamphophasma spinicornis* at the south-east of Bandarban in Farukpara along the river Shoïlopropat: I collected three females on a plant called bherenda by locals, maybe castor-oil plant (*Ricinus communis* (Euphorbiaceae)). I found no male and I have to wait for the hatching of the eggs to know whether they were fertilised or not. These females have a thornless head.



Figures 20-23 Eggs.

20 *Rhamphophasma spinicornis* (Stål), Bangladesh 1.

21 *Sipyloidea* sp., Bangladesh 5.

22 *Baculum* sp., Bangladesh 2.

23 *Trachythorax maculicollis* (Westwood), Bangladesh 8.

Section Two: Srimongol area

Introduction

During four days, from 26th to 29th of September 1997, I searched around Srimongol. This small town, the tea centre of Bangladesh, is situated in the north-east of the country, near the Indian border (Tripura), in the region of Sylhet. It is an undulating region with numerous, and immense, plantations of tea. It is surrounded by India: in the north by Meghalaya, in the east by Assam and in south by Tripura which present a relief much more important. This is the most humid region of Bangladesh with 5000mm of annual rainfall (Cherrapunji (Meghalaya), the most rainy place in the world, is situated just on the other side of the Indian border). Around Srimongol, there are some very beautiful plots of forest. The access to these forests is often difficult owing to their remoteness and to the poverty of the infrastructures, but mainly because of the overprotection of foreigners (the region of Tripura, where tribal people are in guerrilla war against the government of India, is nearby): the chief of the Forest Office in Sylhet even ventured to assure me that he did not know where the forests were(!), apparently in order to dissuade me from going there.

Searches have already been made in this region in the 19th, and at the beginning of the 20th century. At least ten species have been found there. I say "at least" since the information I have is incomplete: before the partition of 1947 that divided the Indian Empire into two countries (India and Pakistan. Pakistan split in 1971 with the former East Pakistan becoming Bangladesh), the region of Sylhet was a part of Assam. Numerous Indian species, all discovered before this event, are recorded as Assam, without other indication. These ten species are:

- Baculum magnum* (Brunner, 1907)
- Baculum stilpnus* (Westwood, 1859)
- Medaura brunneri* Stål, 1875
- Oxyartes despectus* (Westwood, 1848)
- Phasganistra virgea* (Westwood, 1848)
- Phyllium scythe* Gray, 1843
- Rhamphophasma spinicornis* (Stål, 1875)
- Sipyloidea sipylus* (Westwood, 1859)
- Sosibia pholidotus* (Westwood, 1859)
- Trachythorax maculicollis* (Westwood, 1848)

Collection sites

I conducted my searches at two sites: the first two and the fourth day in Lawachora Forest, the third day in Shachori Forest. Lawachora Forest is a small primary forest situated on an undulating land, scored with numerous brooks which are used also as footpaths. The tree species there are mainly teaks and assargach. Shachori Forest is similar and surely much smaller although it seems to straddle India and Bangladesh (no detailed and reliable map is available). The relief is flatter than in Lawachora.

Collecting methods

Here I had also to collect in the daytime, and this constitutes a real disadvantage when you have no time to discern habits of camouflage and recognise host plants. In order to spice up the whole, a lashing rain fell continually during the two first days, this made my searches very difficult; on top of this, hordes of leeches, reinvigorated by the rain, cheerfully assaulted my calves.

At the beginning I applied, with much less success because of my ignorance of host

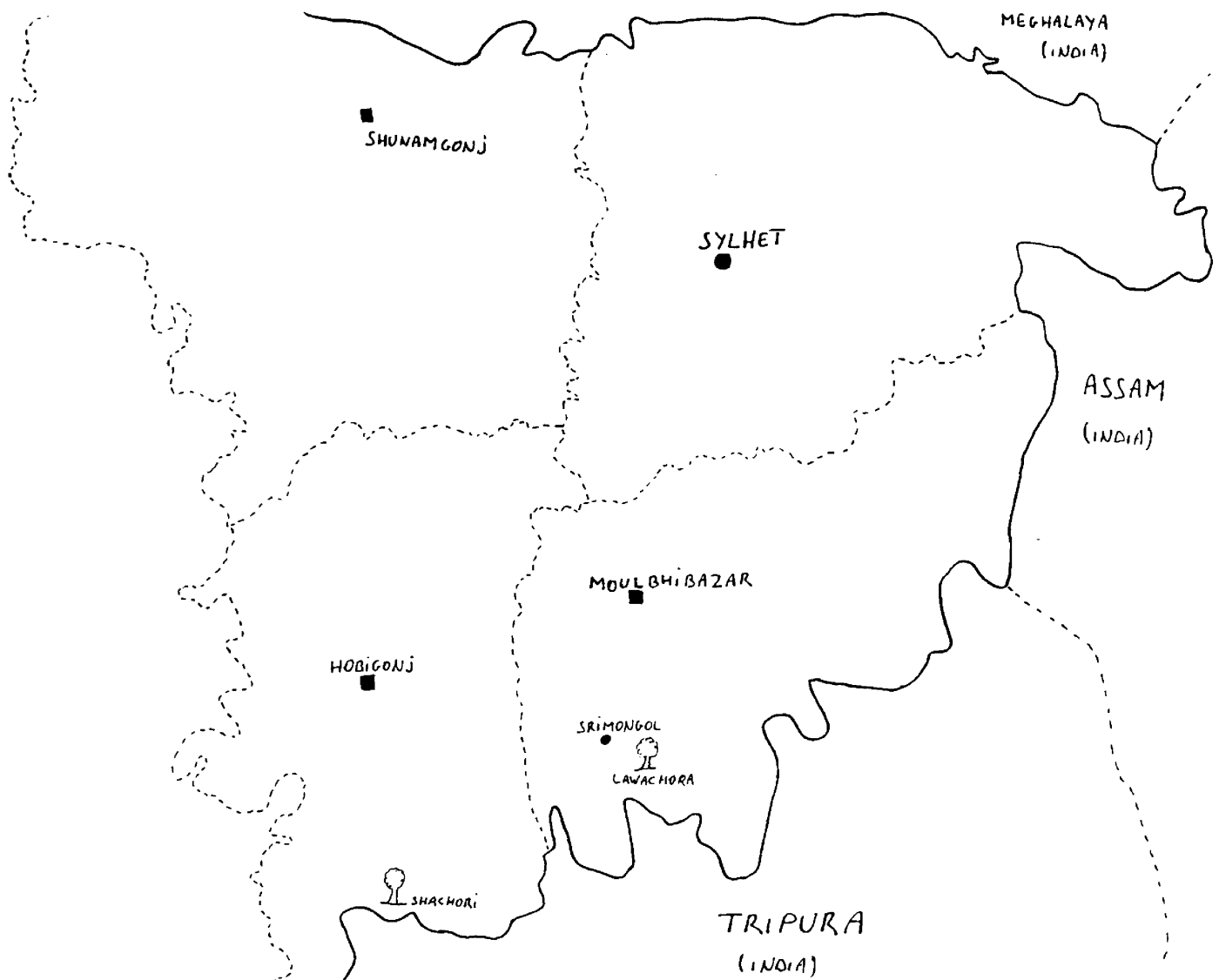


Figure 24. Map of Srimongol area.

plants, the same method I used in the region of Chittagong which simply consists in scrutinising bushes by lifting up branches. Using a beating tray was more productive, especially along overhung paths where stick insects fall far from vegetation, which made them very easily locatable.

Biology

In view of how little time I spent in this region, it was impossible for me to get many particulars. Phasmids were not very numerous compared to some sites near Chittagong. I can put forward two explanations based on my experience in the Chittagong region: the first one is that phasmids are generally more numerous (or easier to see) in secondary forests than in primary forests; the second one is that the period in which I prospected, after monsoon season, is not the most favourable to find phasmids.

1st day: 26th September 1997, Lawachora Forest.

As a post-monsoon cyclone approached the Chittagong coasts just after my departure, the rest of the country was covered with big clouds and was plunged under the rains. Considering

the little time I have at my disposal for my searches, I decided all the same to go and carry out my first search. After a fifteen minutes drive in baby-taxi, I arrived at last into the Lawachora forest which is the most beautiful I saw in Bangladesh.

During four hours in very difficult circumstances (leeches which you do not feel, and rain which you feel too much) I looked haphazardly among the low vegetation. Results: two small phasmids. The first one (individual A) measures 25-30mm, it is dark green with long antennae. The second (individual B) measures 33mm; it is yellowish light green with very long antennae (35mm).

2nd day: 27th September 1997, Lawachora Forest.

Conditions did not improve; I searched again for four hours and I found two new phasmids. The first one (individual C) is an adult male of *Bangladesh 5* (*Sipylodea* sp.). The second one (individual D) is an adult male of a species which I had not seen before: it measures 89mm, with long antennae (61mm); it is winged, black with elytra yellowed-fringed on their extremity.

3rd day: 28th September 1997, Shachori Forest.

Rain finally stopped falling, but other problems emerged: Shachori is situated relatively far from Srimongol (60km), but, to spice up the travel, a bridge fell down, causing delay, a huge crowd, discouragement and yearning to turn back. At last, an obliging policeman discovers a place for me in a lorry and the travel resumes! Due to the time lost *en route*, I have to shorten my searches which last three hours, by following a large overhung path. It is in sunny glades, under a thick vegetation falling from the heights of the path, that I find six phasmids by practising the tree beating technique.

Individual E is a nymph of about 25mm, light green with long antennae.

Individual F is a nymph of 35-40mm, brown, very fine with very long legs and very short antennae.

Individual G is a nymph of about 20mm, dark green, with long antennae.

Individual H is a nymph of about 50mm, uniform green, with short antennae.

Individual I is a nymph of 55-60mm, green, with short antennae.

Individual J measures 36mm, it is light brown with short antennae and very long legs (34mm for the fore legs).

4th day: 29th September 1997, Lawachora Forest.

Fair weather, so my searches last more than six hours: much better conditions than the first two days at this site. As it was rather successful the day before, I pursue the tree beating method; it brings in nine phasmids.

Individual K is an adult male of *Bangladesh 7* (*Medaura* sp.)

Individual L is a nymph of about 25mm, brownish green, with long antennae.

Individual M is an adult male of *Bangladesh 2* (*Baculum* sp.).

Individual N is an adult male in a piteous condition (very damaged wings). It measures 72mm with antennae of 73mm. It is black.

Individual O is a nymph of 25-30mm, dark brown, with long antennae.

Individual P is a nymph measuring about 60mm, green, with long antennae and budding wings.

Individual Q is a very young nymph of about 15mm, with a lightly dumpy aspect. It is brown with small antennae.

Individual R is a nymph of 35-40mm. It is green with long antennae.

Individual S is a nymph of 20-25mm. It is green with long antennae.

Outcome

Nineteen phasmids in four days and seventeen hours of searching: it is not opportune to say the outcome was fantastic. Moreover, from these nineteen phasmids, fourteen were nymphs often very young. As for the five adults, all were males which is frustrating, an adult female is obviously much more interesting because it provides the possibility of obtaining eggs which may have been fertilised if males do exist.

Added to this disappointing outcome was the fact I did not know host plants of these phasmids. I offered a sample of plants picked on the spot, hoping they would be suitable. Away from home, I could not make precise trials as I had just two small tanks at my disposal in which some individuals passed four nights, and then all of them spent the night in the bumpy return train. Circumstances were not really ideal.

On the 30th September, day of my return to Chittagong, individual D died; the day after (1st October) individuals J and M died, and then the following day (2nd October) individuals B and N. Then, as I had found for each one a suitable plant, deaths stopped. At the end of October, I lost two adults (individuals C and K) and the friend who took care of my insects during my holidays threw away individuals L and Q with the food plants.

Meanwhile, I had attempted to classify all these specimens and I was able to distinguish seven species, four of which I did not find in the Chittagong area.

The three species which also occurred in the region of Chittagong are:

Bangladesh 2 (*Baculum* sp.): one adult male (individual M).

Bangladesh 5 (*Sipyloidea* sp.): one adult male (individual C) and four nymphs which produced two adult males and two adult females (individuals E, P, R and S).

Bangladesh 7 (*Medaura* sp.): one adult male (individual K) and one nymph (individual Q) which has been thrown away (see above). I think that the individual Q was a *Bangladesh 7* because of a general resemblance, reinforced by the habit it had of remaining on the ground during daytime.

The four new species are divided thus:

Bangladesh 10: *Sosibia pholidotus* (Westwood, 1848)

One adult male (individual D) and 4 nymphs (individuals A, G, L and O) from which one has been thrown away; as for three others, one became adult (a male) in December and died early March 1998, one died at the sub-adult stage (another male) in February and the last one (a female) died late March, apparently at the last but two stage.

Bangladesh 11: *Sipyloidea casignatus* (Westwood, 1859) (?)

One adult male (individual N) and one nymph (individual B). Both of them died quickly. I rank them in the same species, in spite of the difficulty there is to compare an adult phasmid with a young nymph, because of the remarkable length of the antennae (see above). Moreover the nymph has got a quite long median segment which indicates it belongs to a winged species.

Bangladesh 12: Unidentified.

Two nymphs (individuals F and J). The second one died rapidly, but the first one is still alive and is a female: it is adult now and it measures 156mm with an average breadth of 4-5mm; antennae are 22mm long and fore legs 112mm. It is uniformly light green on the thorax and the two first abdominal segments (including median segment), light brown on the rest of the abdomen. Its eggs are cream-coloured and are in the shape of little sticks: they are 12mm long by 1.5mm large; they present a cleft aspect at the bottom and are crowned with a hoof-shaped operculum measuring 3mm in height.

Bangladesh 13: Unidentified.

Two nymphs (individuals H and I), still alive at present. They are one male and one female which are adult now. The female measures 128mm with a breadth of 4mm at the thorax level; its antennae are 15mm long and its fore legs 104mm long. As to the male, it is 105mm long with a breadth of 2.5mm; its antennae measure 28mm and its fore legs 108mm. Both are dark brown. Eggs are very similar to those of *Bangladesh 12* but are brown and smaller (8.5mm long by 1.25mm large).

Distribution summary

Lawachora Forest:

Baculum sp. (= *Bangladesh 2*)
Sipyloidea sp. (= *Bangladesh 5*)
Medaura sp. (*M. brunneri* ?) (= *Bangladesh 7*)
Sosibia pholidotus (= *Bangladesh 10*)
Sipyloidea casignatus (?) (= *Bangladesh 11*)

Shachori Forest:

Sipyloidea sp. (= *Bangladesh 5*)
Sosibia pholidotus (= *Bangladesh 10*)
Bangladesh 12
Bangladesh 13

Addendum 2

For four days in the summer of 1998 I was in the Srimongol area and I returned to Lawachora and Shachori Forests. I found many more phasmids than the first time I went there one year before (19 adults and 37 nymphs). I found no new species (I have to wait until the nymphs I am rearing now become adult to be sure of this) but I found some species where I did not find them before.

Rhamphophasma spinicornis (*Bangladesh 1*): I found both males and females in Lawachora and in Shachori (new records).

Bangladesh 2 (*Baculum sp.*): one female and two males in Lawachora.

Sipyloidea sp. (*Bangladesh 5*): one adult male and some nymphs from Shachori and Lawachora.

Medaura sp. (*Bangladesh 7*): males and one female in Lawachora but this female was much smaller than those found in Chittagong area (76mm against 100mm). So this may be a different species of *Medaura* I just found one egg before she died after some days.

Sosibia pholidotus (*Bangladesh 10*): some nymphs in Lawachora of which two newly hatched ones which are very attractive (bright green with many little red spots). Back in Europe I was unhappy not to find a suitable food plant for them.

Sipyloidea casignatus (?) (*Bangladesh 11*): some nymphs of which one from Shachori (new record). They all died when I still was in Bangladesh.

Bangladesh 12: some nymphs of which two from Lawachora (new record).

Bangladesh 13: one male and one female adult plus some nymphs in Shachori.

These last two species were found in Shachori, living in sunny places most of the time under a curtain of vegetation (usually bamboo), among tufts of a grass (30-40cm in height) growing on the sides of an overhung trail. Sometimes they were very numerous in a very little space. This grass is their food plant: Dr. Matiur Rahman of Bangladesh National Herbarium in Dhaka identified it as *Brachiaria distachya* (Graminaea).

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